FIG. 1

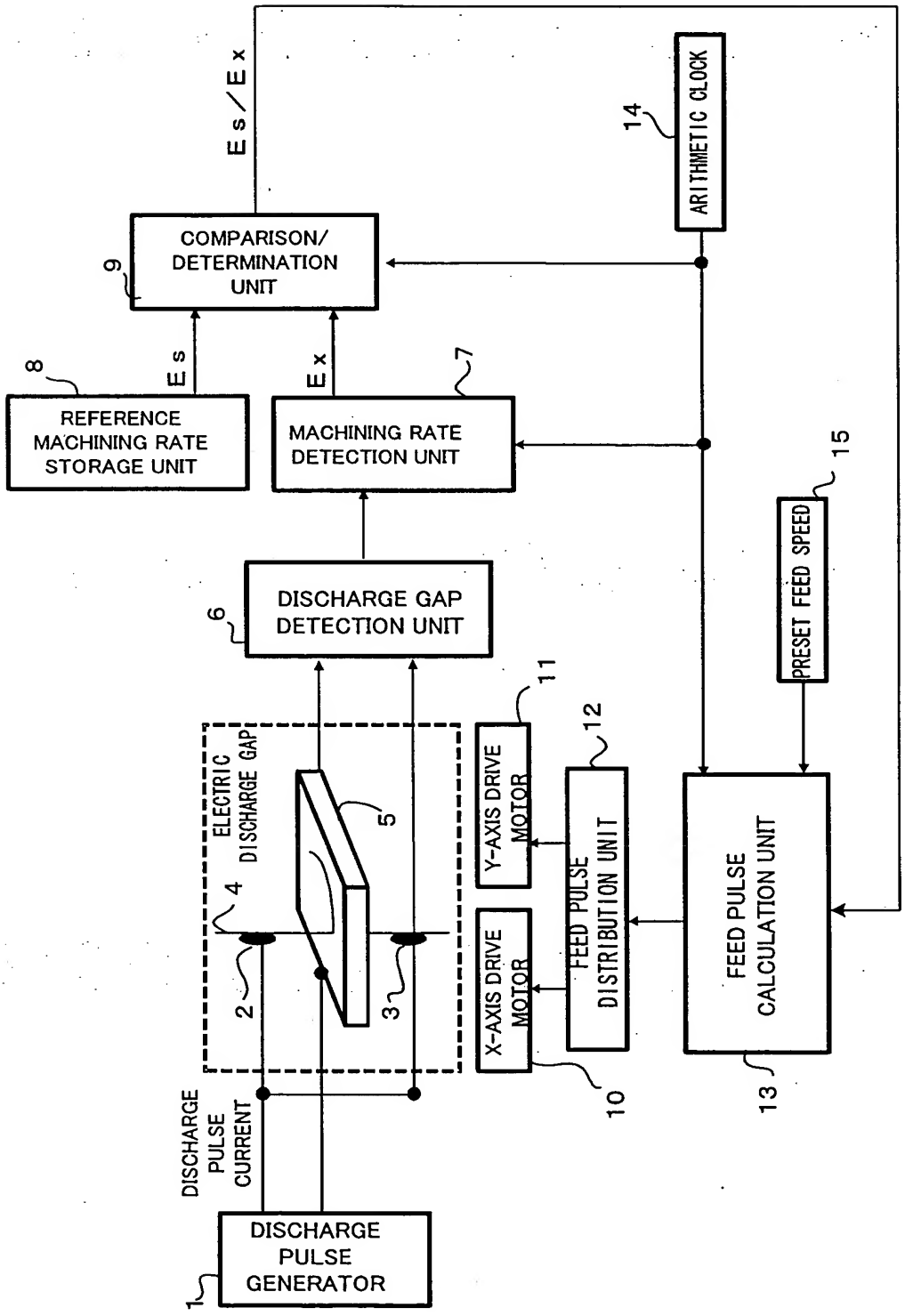
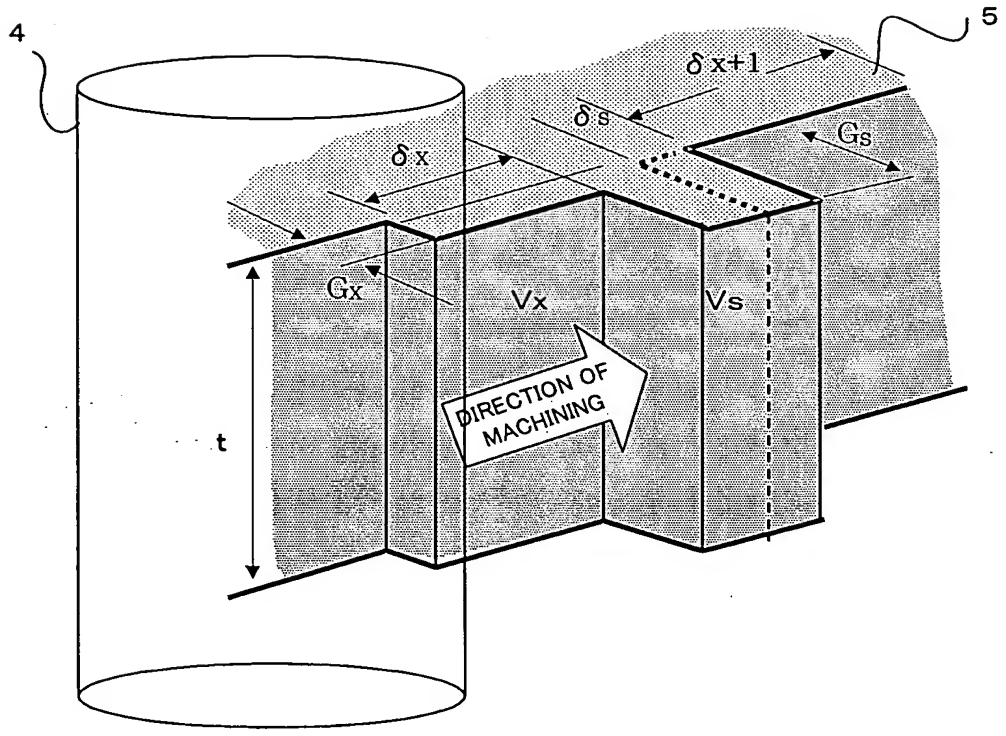

Es/Ex
14
ARITHMETIC CLOCK
9
COMPARISON/
DETERMINATION
UNIT
8
Es
Ex
7
REFERENCE
MACHINING RATE
STORAGE UNIT
MACHINING RATE
DETECTION UNIT
15
PRESET FEED SPEED
6
DISCHARGE GAP
DETECTION UNIT
11
12
ELECTRIC
DISCHARGE GAP
4
5
Y-AXIS DRIVE
MOTOR
FEED PULSE
DISTRIBUTION UNIT
FEED PULSE
CALCULATION UNIT
2
3
X-AXIS DRIVE
MOTOR
10
13
DISCHARGE
PULSE
CURRENT
DISCHARGE
PULSE
GENERATOR
1

FIG. 2



Gs , Gx : WIDTH OF PORTION TO BE REMOVED

Vx , Vs : AVERAGE MACHINING VOLTAGE

Vo : NO LOAD VOLTAGE

Vs < Vx IN THIS CASE

δs : REFERENCE MOTION AMOUNT PER UNIT TIME

δx : MOTION AMOUNT PER UNIT TIME

$= \delta s * (Vo - Vs) / (Vo - Vx)$

t : THICKNESS

S: AREA OF ELECTRIC DISCHARGE $\propto G \times t$

FIG. 3

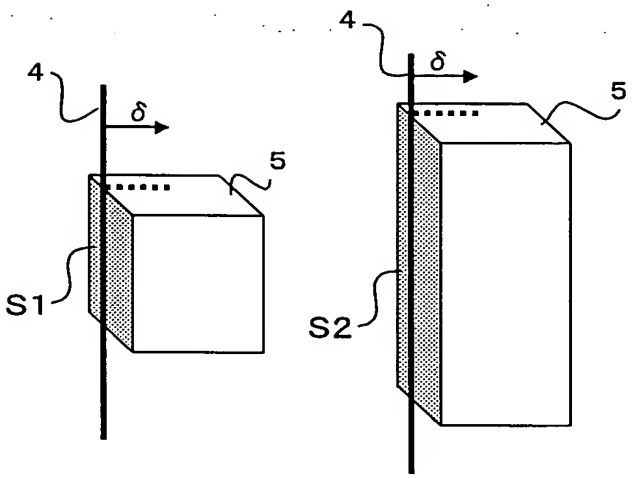


FIG. 4

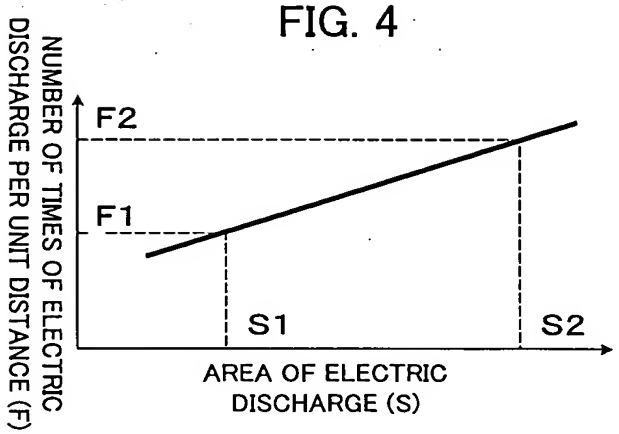


FIG. 5

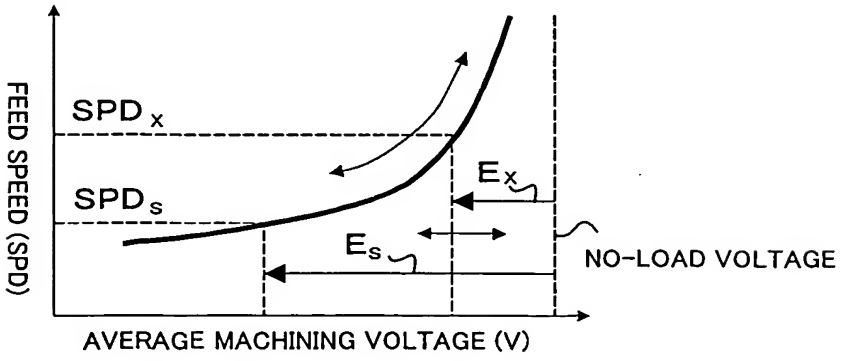


FIG. 6

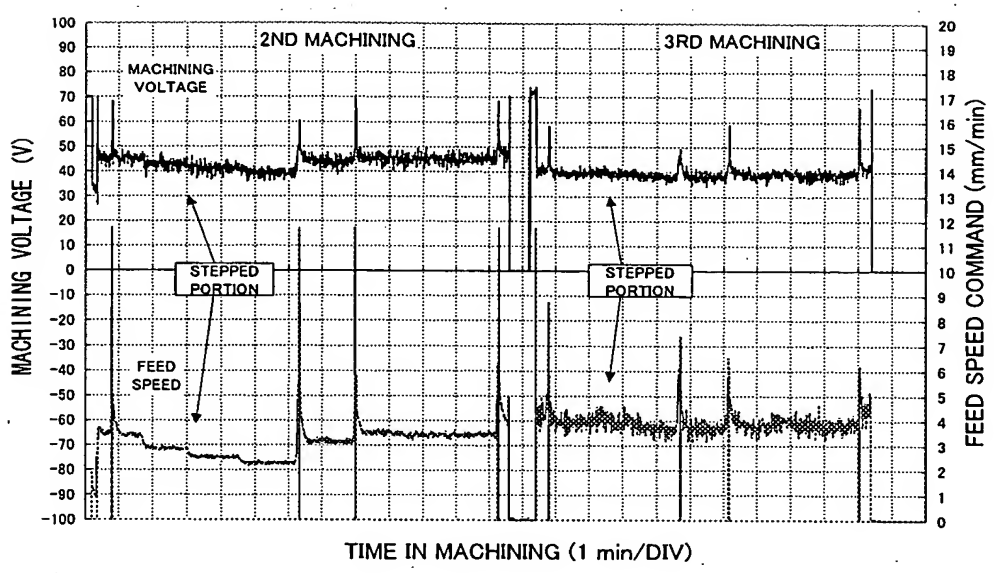

2ND MACHINING
3RD MACHINING
MACHINING VOLTAGE
STEPPED PORTION
STEPPED PORTION
FEED SPEED
MACHINING VOLTAGE (V)
FEED SPEED COMMAND (mm/min)
TIME IN MACHINING (1 min/DIV)

FIG. 7

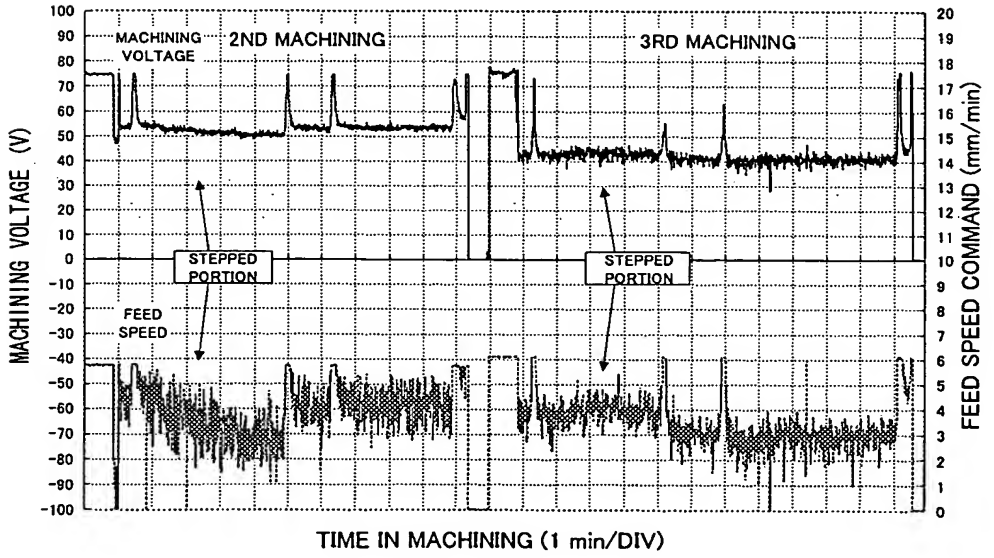
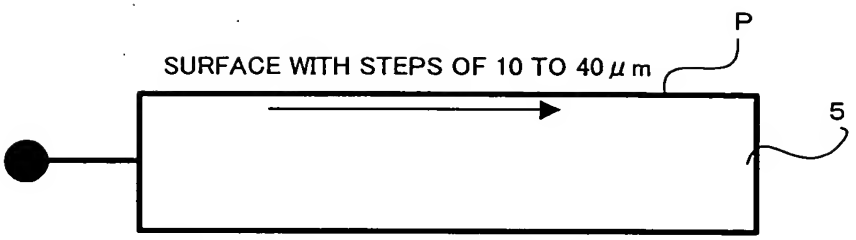

MACHINING VOLTAGE
2ND MACHINING
3RD MACHINING
STEPPED PORTION
STEPPED PORTION
FEED SPEED
MACHINING VOLTAGE (V)
FEED SPEED COMMAND (mm/min)
TIME IN MACHINING (1 min/DIV)

FIG. 8



MATERIAL: SKD11 THICKNESS: 50mm

WIRE DIAMETER: 0.25mm

MACHINING SHAPE: 16 × 6 mm

2ND DISPLACEMENT: 60 μm

3RD DISPLACEMENT: 15 μm

FIG. 9

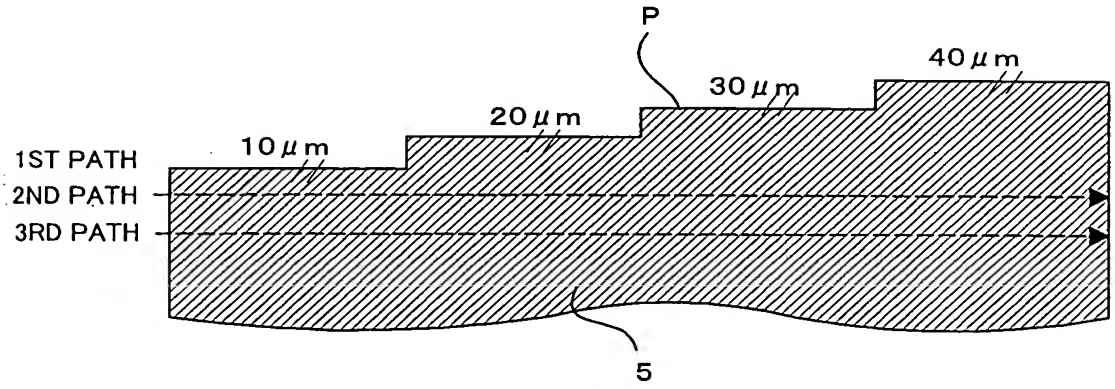


FIG.10

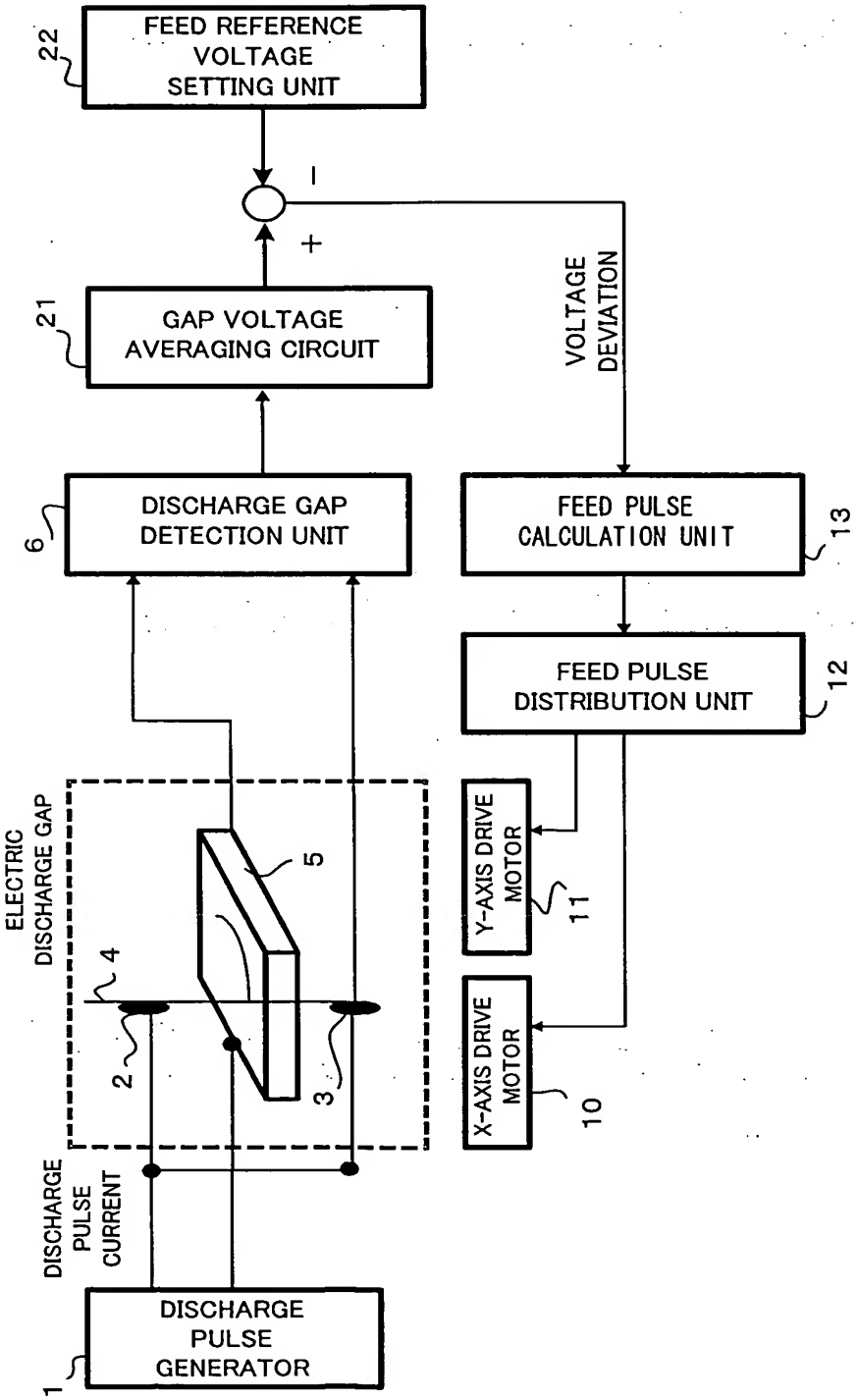
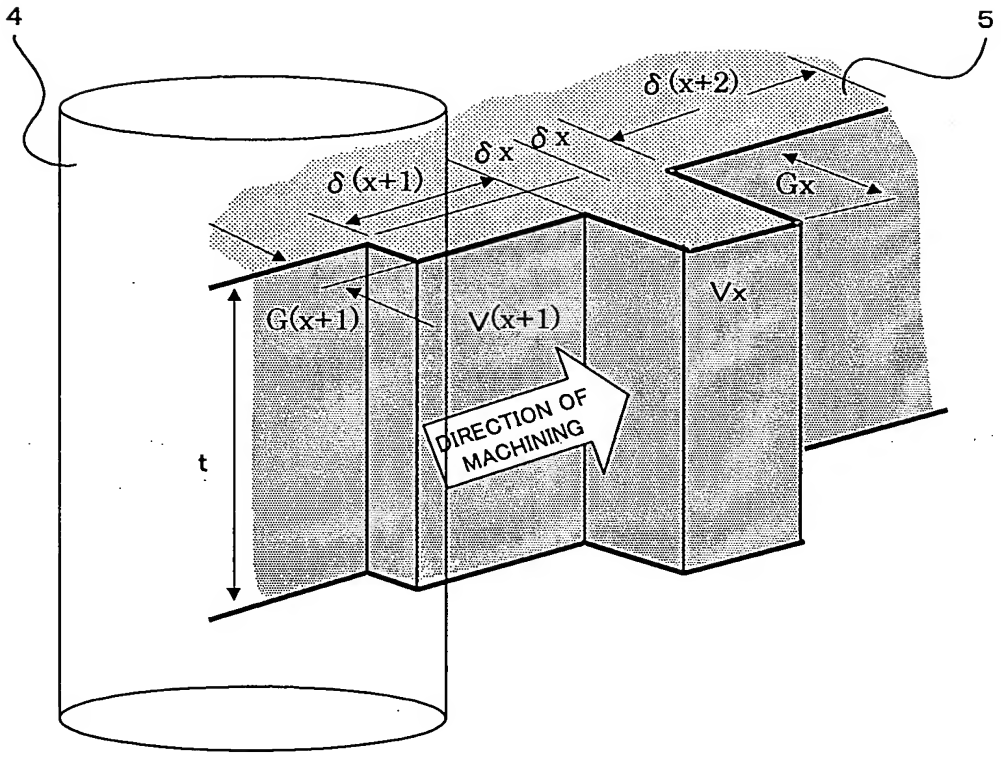

FEED REFERENCE VOLTAGE SETTING UNIT
22
−
+
VOLTAGE DEVIATION
GAP VOLTAGE AVERAGING CIRCUIT
21
DISCHARGE GAP DETECTION UNIT
6
FEED PULSE CALCULATION UNIT
13
FEED PULSE DISTRIBUTION UNIT
12
Y-AXIS DRIVE MOTOR
11
X-AXIS DRIVE MOTOR
10
ELECTRIC DISCHARGE GAP
5
4
2
3
DISCHARGE PULSE CURRENT
DISCHARGE PULSE GENERATOR
1

FIG.11



Gx 、G(x+1) : WIDTH OF PORTION TO BE REMOVED

Vx、 V(x+1) : AVERAGE MACHINING VOLTAGE

V(x) < V(x+1) IN THIS CASE

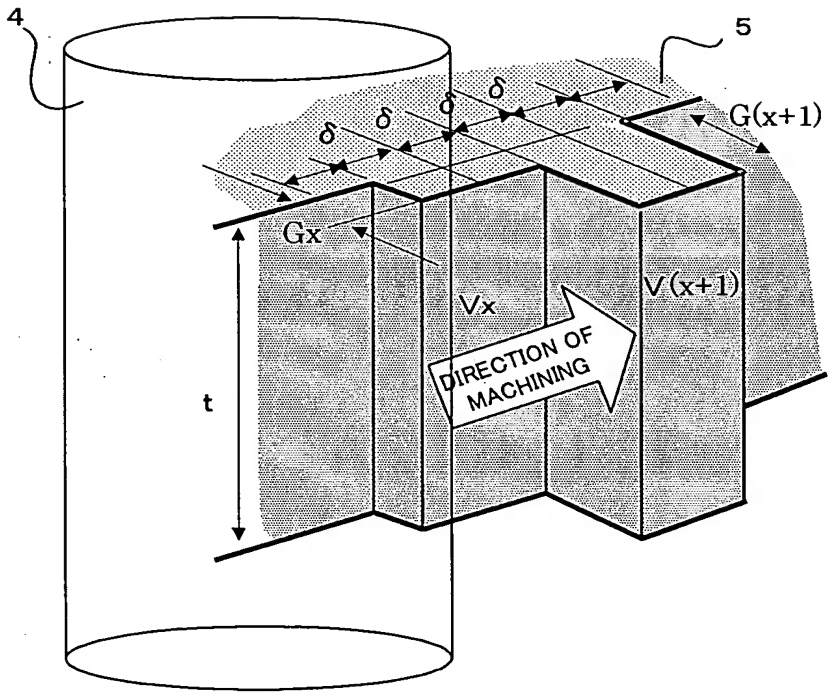
Vs : REFERENCE VOLTAGE

δ x : MOTION AMOUNT PER UNIT TIME = (Vx − Vs) * GAIN

δ (x+1) : MOTION AMOUNT PER UNIT TIME = (V(x+1) − Vs) * GAIN

t : THICKNESS

FIG.12



Gx 、G(x+1) : WIDTH OF PART TO BE REMOVED

Vx、 V(x+1) : AVERAGE MACHINING VOLTAGE

V(x+1) < V(x) IN THIS CASE

δ : MOTION AMOUNT PER UNIT TIME

t : THICKNESS